Vista MiniD400
Installation & User's Manual

Before You Begin
Read these instructions before installing or operating this product.

Note: This installation should be made by a qualified service person and should conform to local codes.
This manual provides installation and operation information. To use this document, you must have the following minimum qualifications:

- A basic knowledge of CCTV systems and components
- A basic knowledge of electrical wiring and low-voltage electrical connections

Intended use
Only use this product for its designated purpose; refer to the product specification and user documentation.

Customer Support
For assistance in installing, operating, maintaining and troubleshooting this product refer to this document and any other documentation provided. If you still have questions, please contact Norbain Technical Support and Sales:

210 Wharfedale Road
Winnersh Triangle, Wokingham, Berks
RG41 5TP
0118-912-5000

Note: **You should be at the equipment and ready with details before calling Technical Support.**

Conventions Used in this Manual
Boldface or button icons highlight command entries. The following **WARNING, CAUTION** and **Note** statements identify potential hazards that can occur if the equipment is not handled properly:

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* **WARNING:**
Improper use of this equipment can cause severe bodily injury or equipment damage.

**** Caution:**
Improper use of this equipment can cause equipment damage.

Note: Notes contain important information about a product or procedure.

RoHS Announcement
All lead-free products offered by the company comply with the requirements of the European law on the Restriction of Hazardous Substances (RoHS) directive, which means our manufacture processes and products are strictly "lead-free" and without the hazardous substances cited in the directive.

Equipment Disposal:
Within in the European Union products marked with the WEEE logo cannot be disposed of as unsorted municipal waste. Upon the purchase of equivalent new equipment return this product to your local supplier or dispose of it at designated collection points. For more information please visit www.recyclethis.info or http://www.vista-cctv.com/weee/

CE Mark
This apparatus is manufactured to comply with the radio interference. European representative for manufacture (EMC): Norbain Ltd., 210 Wharfedale Road, Winnersh Triangle, WOKINGHAM. Berks. RG41 5TP, UK.

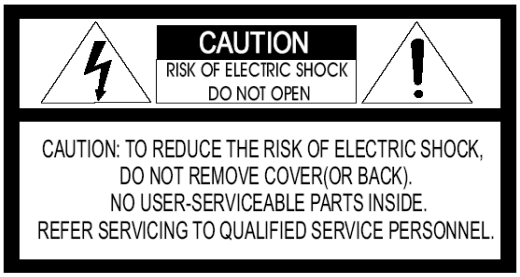
* This symbol indicates electrical warnings and cautions.
** This symbol indicates general warnings and cautions.

NORBAIN SD LTD reserves the right to make changes to the product and specification of the product from time to time without prior notice.

WARNINGS AND CAUTIONS

To reduce the risk of fire or electric shock, do not insert any metallic objects through the ventilation grills or other openings on the equipment.

CAUTION


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER(OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

24VAC Type Model: Use Certified/Listed Class 2 power supply transformer only.

PRECAUTIONS

Safety----------
Should any liquid or solid object fall into the MiniD400, unplug the unit and have it checked by a qualified person before operating again.

Unplug the unit from the wall outlet if it is not going to be used for several days. To disconnect the cord, pull it out by the plug, never by the cord itself.

Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on surfaces (rugs, blankets, etc.)

The height and linearity controls located at the rear panel are for adjustments by qualifies personnel only.

Installation----------
Do not install the unit in extremely hot or humid environments or places exposed to excessive dust or mechanical vibrations.

Cleaning----------
Clean the unit with a slightly damp soft cloth. Use a mild household detergent. Never use strong solvents such as thinner or benzene as they might damage the finish of the unit.

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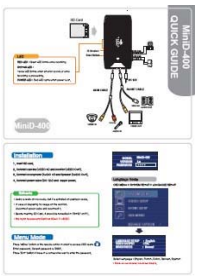
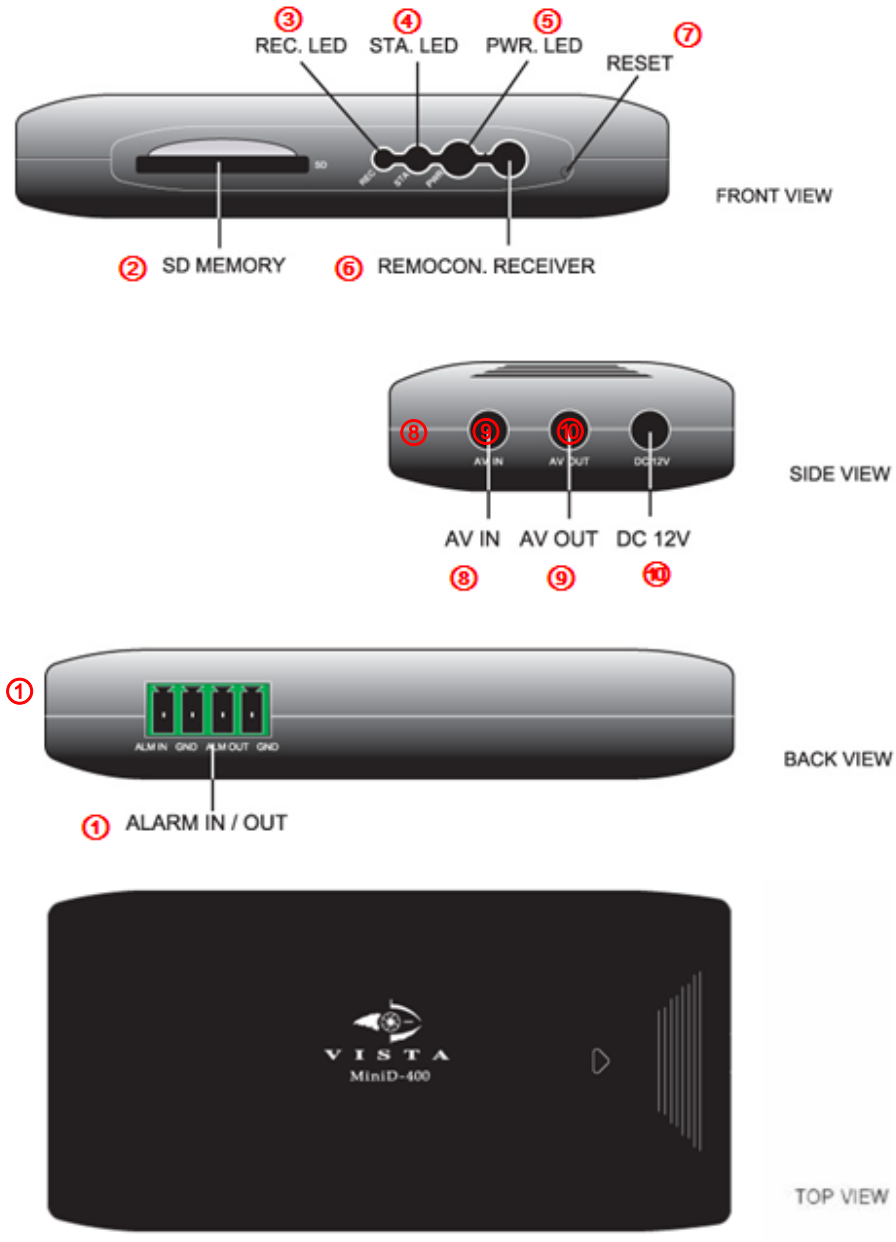
Chapter 1: Packing Contents

► **Contents in the package**

MiniD400 Main Unit	Remote Controller	AV-IN / AV-OUT Connector
Terminal Block	12V Power Supply	Installation CD
		
Quick Guide	1GB SD Card Supplied, 8GB Maximum allowed	SD Reader (Option)

Chapter 2: Getting To Know Your MiniD-400

▸ VISTA MINID-400



This chapter briefly describes the functions of each button on MiniD400. The buttons are used to operate the basic functions of MiniD400, such as recording, playback, fast-forward, reverse play and etc. For more details on the set-up and operation of MiniD400, refer to Chapter 6, MiniD400 MENU.

1	**Sensor-in / Alarm-out**
	The sensor terminal block is used to connect a sensor such as PIR to the MiniD400. This will trigger the device to event record. The alarm output terminal is used to install a single alarm device.
2	**SD Memory Slot**
	Insert SD Card into the slot for storing data.
3	**Recording LED**
	This light illuminates when the MiniD400 is recording.
4	**Status LED**
	This light blinks when events have occurred or there is an error.
5	**Power LED**
	This light illuminates when the MiniD400 is powered up.
6	**Remote control Receiver**
	When controlling MiniD400 by remote control, be sure to point at the receiver.
7	**Reset**
	Press the reset button if you want to return setting values to the default.
8	**AV-IN**
	Connect AV-IN connector
9	**AV-OUT**
	Connect AV-OUT connector
10	**Power**
	Connect 12V power supply in the package.

Chapter 3: Remote control

1	**REC**	Starts and stops MiniD400 recording. Turn the SD power off when pressing the REC button for 3 seconds. (Recording can resume after 20 seconds)
2	**MENU**	Enter OSD menu. On OSD menu, go to the upper menu.
3	**UP/ DOWN**	On OSD menu, chooses menu fields and change values. On search mode, play the previous or next recorded file.
4	**LEFT/ RIGHT**	REW: Fast Rewind (X2-X4-X8-X16) FF: Fast Forward (X2-X4-X8-X16)
5	**REW**	REW: Fast Rewind (X2-X4-X8-X16)
6	**FF**	FF: Fast Forward (X2-X4-X8-X16)
7	**PLAY**	Playback at X1
8	**STOP**	Stop recording or playback. In playback mode, go back to the first frame.
9	**PAUSE**	Pause playback or resume playback.
10	**MUTE**	Remove audio.
11	**ENT**	On playback mode, playback at X1. On OSD menu, enter values.
12	**SEARCH**	Enter Search menu. On search menu, move to upper search menu.
13	**MODE**	Switch between playback mode and live view mode.

Remote Controller Functions of LIVE MODE and PLAY Remote PLABACK MODE

Function	LIVE		PLAY BACK			
	Stand-by	Recording	Stand-by	Play	Menu	Remark
RECORD	O	O	X	X	X	O: Available X: N/A
MENU	O	X	O	O	O	
SEARCH	O	X	O	O	X	
MODE	O	X	O	O	O	
UP	X	X	O	O	O	
DOWN	X	X	O	O	O	
REW	X	X	X	O	O	
FF	X	X	X	O	O	
ENTENT	X	X	O	O	O	
REW	X	X	X	O	O	
FF	X	X	X	O	O	
PLAY	X	X	O	O	O	
STOP	X	X	X	O	X	
PAUSE	X	X	X	O	X	
MUTE	X	X	X	O	X	

Chapter 4: Getting Started

OVERVIEW ON SET-UP PROCEDURES

Below is an overview of the MiniD400 installation procedures, (A detailed explanation is found in Chapter 5 - Hardware Installation.)

(1) Insert a SD MEMORY.
(2) Connect MliniD400 to a TV set or monitor.
(3) Connect camera to MiniD400.
(4) Connect optional accessories (sensors or alarm).
(6) Connect the power.
(7) Turn the power on.
(8) Start TV Monitoring and recording.

General Operating Advice:

● Make sure that a SD Memory is inserted and a camera is properly connected.
(See Chapter 5 -Hardware Installation)

● The SD Memory Format setting must be set (Refer to Chapter 5 – SD Memory Installation for more information.) Otherwise, MiniD400 may not recognize the SD Memory.

● The firmware used in MiniD400 is compatible with your computer's operating system (i.e. Windows). Therefore, you can take the SD memory card from this MiniD400 and install it in your computer to view recorded video. (Refer to the PC Viewer manual.)

● MiniD400 offers you the flexibility to choose a recording frame rate (maximum rate: 25 frames per second). A faster frame rate provides more natural recorded video images. However, it requires more SD Memory storage. You may reduce the frame rate (minimum rate: 1 frame per second) to fit longer recording sessions in consideration of your SD card capacity.

● If a camera is normally connected to MiniD400 it enters the default operational state: VIEW mode. In this mode, MiniD400 does not record nor play the recorded stream. It just shows the Live images from camera connected to MiniD400

● The default recording value for the MiniD400 is set at 25 frames per second with normal video quality.
If you use the supplied 1GB SD Memory card, the MiniD400 can continuous record for approximately 2 hours.

● There is an exception to entering the VIEW mode at start up. If the power is turned off while MiniD400 is performing emergency recording (i.e. a power failure), it will automatically enter recording mode when the MiniD400 reboots.

Refer to Chapter 5 - Hardware Installation for more information on installation procedures.

Chapter 5: Hardware Installation

SD MEMORY INSTALLATION

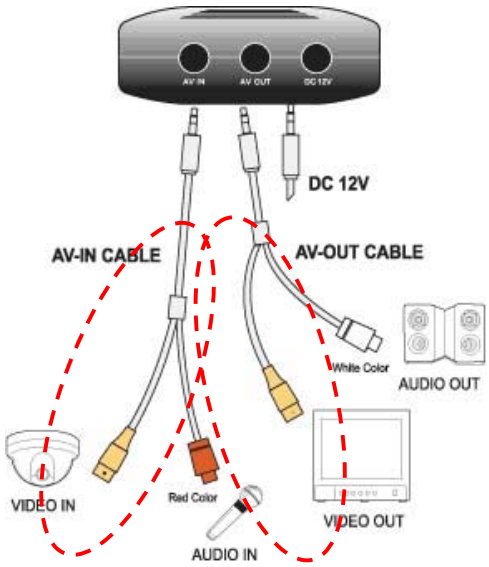
① Format SD card	Insert the SD card into SD card slot on your PC and format it in FAT32. ※ In case there is no card slot on your PC, use an external SD card reader.
② Insert SD card into SD slot on MiniD400	After formatting, take the SD card from your PC and insert it into the MiniD400's SD slot.
③ Backup recorded files in SD card	When full, the SD card the recorded files can be backed up in your PC. Insert the SD card in your PC and move the files from the SD card to the HDD of our PC. You can also check each recorded file through MiniD Player.

Vista recommends SanDisk SD cards; these have been tested with MiniD400. Vista does not guarantee compatibility with other makes.
The SD card brands that Vista can recommend are as follows;
- SanDisk
- SDHC: Sandisk 8GB

Attention
Do not take out the SD card or turn off MiniD400 while it is in record mode. It may damage SD card.
When in record mode, turn off SD power by first pressing recording button for 3 seconds and then take the SD card out.

CONNECTING MiniD400 TO YOUR TV SET OR MONITOR

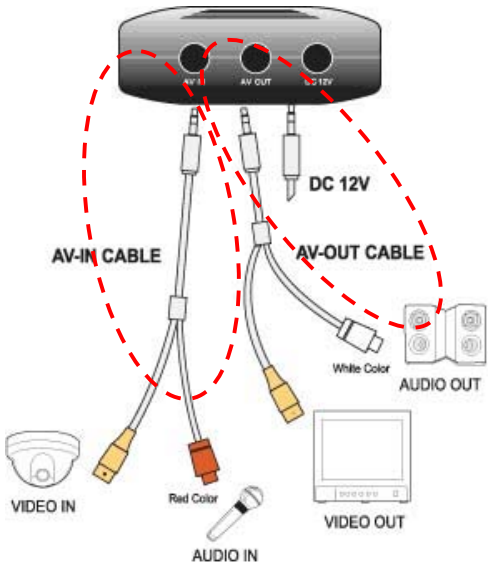
① Video Input/Output Connection (For TV / monitor screen display)



To display images from the MiniD400, connect the video output to your monitor. Any Television with a VIDEO INPUT terminal is suitable for displaying the images. The diagram above shows the video signal connections.
Connect the camera to VIDEO-IN terminal of AV-IN connector; connect the monitor to VIDEO OUT terminal of AV-OUT connector.

***Note: The RCA cable required for this connection is not supplied with the* MiniD400.**

② Audio Input / Output Connection (For TV / monitor speaker)



Connect the microphone to the AUDIO-IN terminal of AV-IN connector; then connect the speaker to AUDIO-OUT terminal of AV-OUT connector.

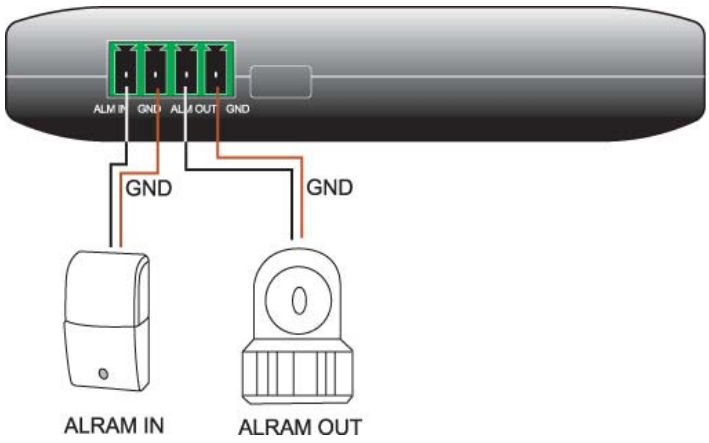
***Note: The RCA cable required for this connection is not supplied with the* MiniD400.**

ALARM INSTALLATION

The MiniD400 has an internal switch for sounding an alarm. When a sensor is triggered, the internal alarm is also activated.

There are two steps to install an alarm.
1. Connect the alarm cable to the alarm switch terminal.
2. Connect the alarm power cables to the appropriate power source.

Refer to the diagram below for information on how to connect an alarm to your MiniD400.



Note: Contact an authorized dealer for information about buying the appropriate alarm device for your needs and for information concerning its proper installation procedures.

Chapter 6: OSD MODE

1. ACCESS TO OSD MENU

Press the 'MENU' button on remote control to access to MiniD400 OSD menu.
Please refer to 'Chapter 3: Remote control' about how to use remote control buttons.

The default Password is '0000'. The password can be changed on '[SUB MENU]→[PASSWORD CHANGE]'.
In order to select cameras for recording, set recoding quality, schedule recording times and to set other operation parameters, you will need to access the MiniD400 menu.
Numerals can be selected by pushing up/down button on the remote control.

2. MAIN MENU

In the main menu, the 'indicator '**>**' will be shown on the left of each sub-menu.
Press 'UP/DOWN' button on the remote control to select a desired sub-menu. When '**>**' is indicated on the desired menu, press 'ENTER' to access the sub-menu.

3. SYSTEM SETUP

Configure current time and 'DAY LIGHT SAVING' option. On setting the current time, the field order should be as follows;
2004/02/17 = year / month / day 19:44:32 = hour /minute / second

3.1 TIME SET > DAY LIGHT SAVING

SELECT 'ON', when you want to use day light saving time. You can setup a time period when the day light saving is period is to apply.

3.2 LANGUAGE SETUP

English, French, Dutch, German, Spanish

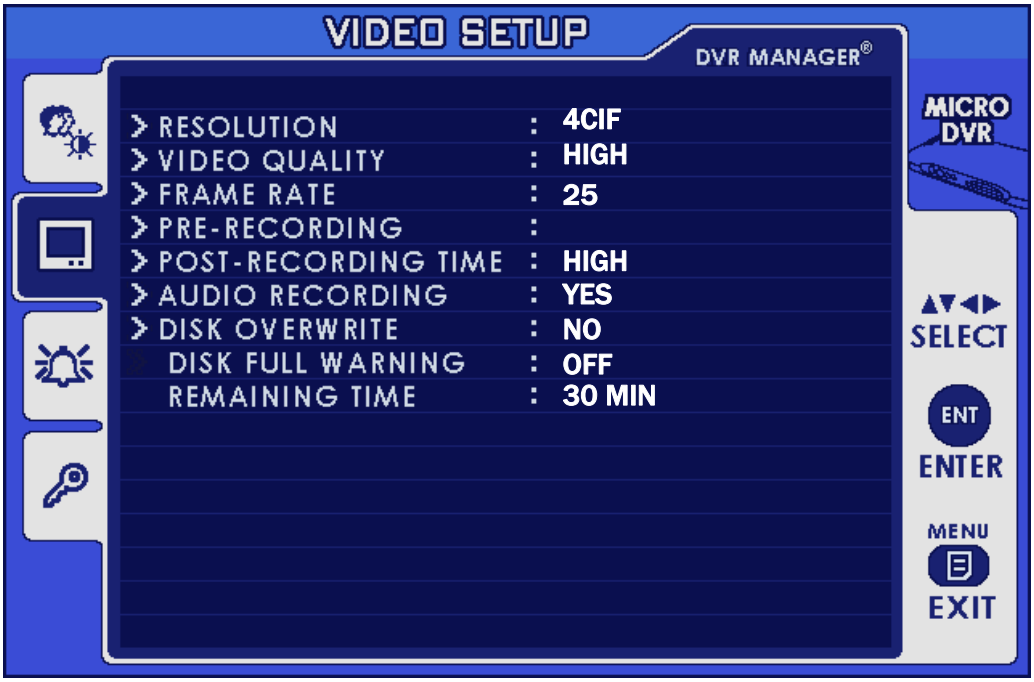
3.3 VIDEO OUTPUT

Not selectable. Display NTSC or PAL according to unit's CCD type.

3.4 BRIGHTNESS:

Select brightness value among low, normal and high.

4. VIDEO SETUP



4.1 RESOLUTION

Select video resolution (4CIF / 2CIF / CIF)

VIDEO INPUT (LIVE VIEW) Resolution - PAL

	HIGH	NORMAL	LOW
4CIF	704x576 / 25fps	704x576 / 25fps	704x576 / 25fps
2CIF	704x288 / 25fps	704x288 / 25fps	704x288 / 25fps
CIF	352x288 / 25fps	352x288 / 25fps	352x288 / 25fps

VIDEO INPUT (LIVE VIEW) Resolution - NTSC

	HIGH	NORMAL	LOW
4CIF	704x480 / 30fps	704x480 / 30fps	704x480 / 30fps
2CIF	704x240 / 30fps	704x240 / 30fps	704x240 / 30fps
CIF	352x240 / 30fps	352x240 / 30fps	352x240 / 30fps

PLAY VIEW Resolution - PAL

	HIGH	NORMAL	LOW
4CIF	704x576	704x576	704x576
2CIF	704x576	704x576	704x576
CIF	704x576	704x576	704x576

PLAY VIEW Resolution - NTSC

	HIGH	NORMAL	LOW
4CIF	704x480	704x480	704x480
2CIF	704x480	704x480	704x480
CIF	704x480	704x480	704x480

4.2 VIDEO QUALITY

LEVEL (HIGH / NORMAL / LOW): Select desired video level from 'LOW' to 'HIGH'.

MODE	HIGH	NORMAL	LOW
QUALITY(4CIF)	1500kbps	1000kbps	500kbps
QUALITY(2CIF)	1200kbps	800kbps	400kbps
QUALITY(CIF)	1000kbps	600kbps	300kbps

4.3 FRAME RATE

PAL: Selectable among 25, 12, 8, 6, 3, 1
NTSC: Selectable among 30, 15, 10, 6, 3, 1

4.4 PRE RECORDING TIME

MODE	HIGH		NORMAL		LOW	
	Bit Rate (kbps)	Pre Recording Time	Bit Rate (kbps)	Pre Recording Time	Bit Rate (kbps)	Pre Recording Time
4CIF	1500	10sec	1000	20sec	500	30 sec
2CIF	1200	15 sec	800	25 sec	400	35 sec
CIF	1000	20 sec	600	30 sec	300	40 sec

4.5 POST RECORDING TIME

Post-recording time means how long the unit will record for after the end of the event's trigger. (Min. 5 sec)

4.6 AUDIO RECORDING

Audio function can be turned OFF or ON in the menu.

4.7 DISK OVERWRITE

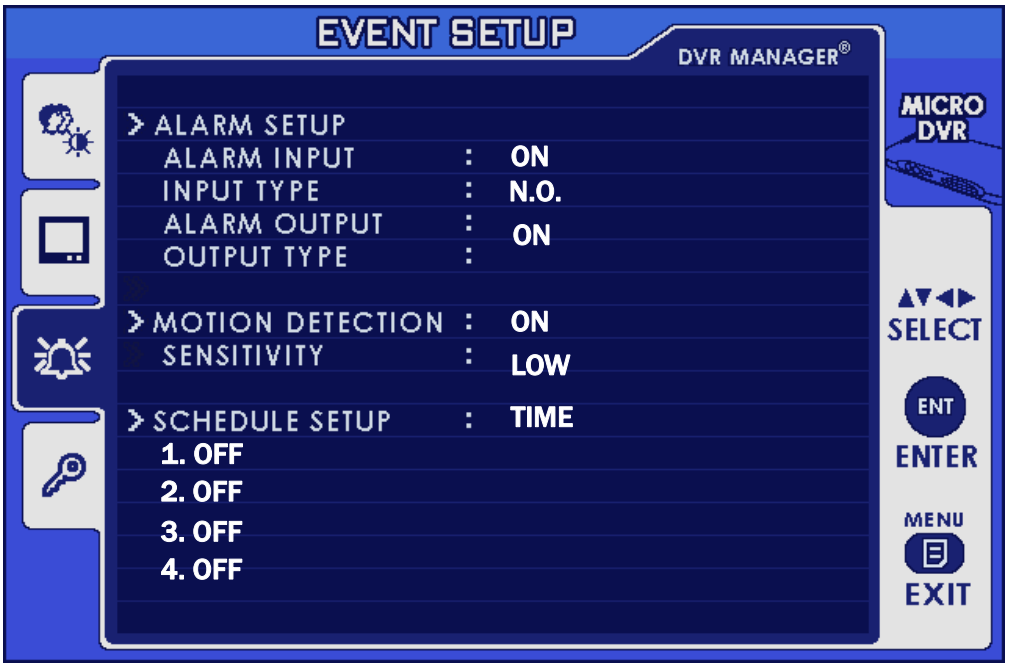
If overwrite is set to ON, the MiniD400 will continue recording and automatically overwriting the oldest recorded files when SD card storage capacity is full. Set to OFF, the recording will stop when the SD card is full.

4.7.1. DISK FULL WARNING

Select 'ON' if you want to display 'DISK FULL WARNING' when the SD card is full.

4.7.2. REMAINING TIME: This shows remaining time for further recording.

5. EVENT SETUP



5.1 ALARM SETUP

5.1.1 ALARM INPUT (ON / OFF): Select 'ON' if you want to use alarm input device.

5.1.2 INPUT TYPE: Select alarm input type between 'Normally Open' and 'Normally Close'
NC: NORMAL CLOSE
NO: NORMAL OPEN

5.1.3 ALARM OUTPUT:

ALARM INPUT	ALARM OUTPUT	
Normally Open	**Normally Open**	Alarm input type is Normal Open. The device connected to alarm output is in 'OFF 'status and turns ON when events occur.
Normally Open	**Normally Closed**	Alarm input type is Normal Open. The device connected to alarm output is in 'ON 'status and turns OFF when events occur.
Normally Closed	**Normally Open**	Alarm input type is Normal Close. The device connected to alarm output is in 'OFF 'status and turns ON when events occur.
Normally Closed	**Normally Closed**	Alarm input type is Normal Close. The device connected to alarm output is in 'ON 'status and turns OFF when events occur.

Note: In 'Normal Close' mode, if an intruder cuts the cable that connects the sensor to the MiniD400, the unit will start to record automatically. In 'Normal Open' mode, if an intruder cuts the cable that connects the sensor to the MiniD400, the unit will not start to record.

5.2 MOTION DETECTION

5.2.1 SENSITIVIITY (LOW / NORMAL / HIGH): You can select the motion detection's sensitivity. Set to HIGH for greater sensitivity.

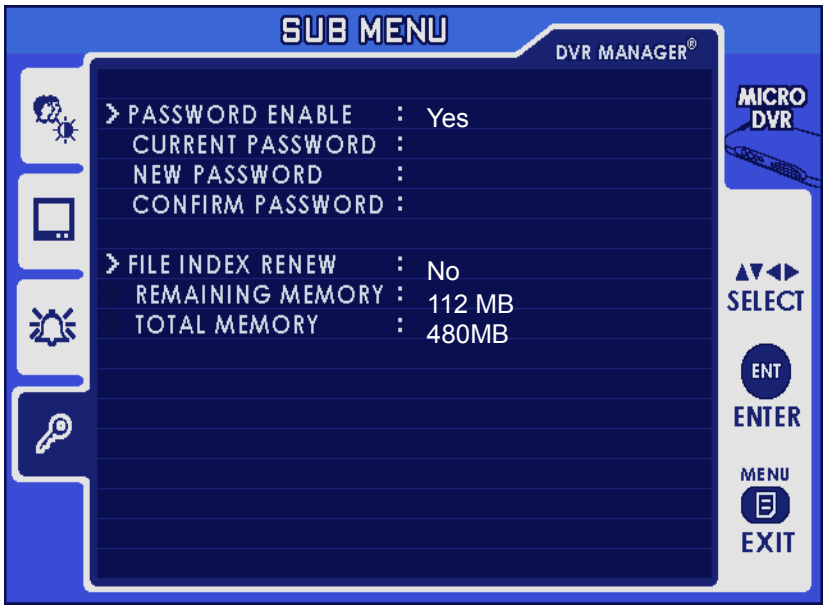
5.3 SCHEDULE SETUP

Up to 4 record time schedules can be set.

5.3.1 TIME: Starts to record on the scheduled time.
5.3.2 TIME & EVENT: Starts to record when motion is detected or an alarm occurs within the scheduled period.

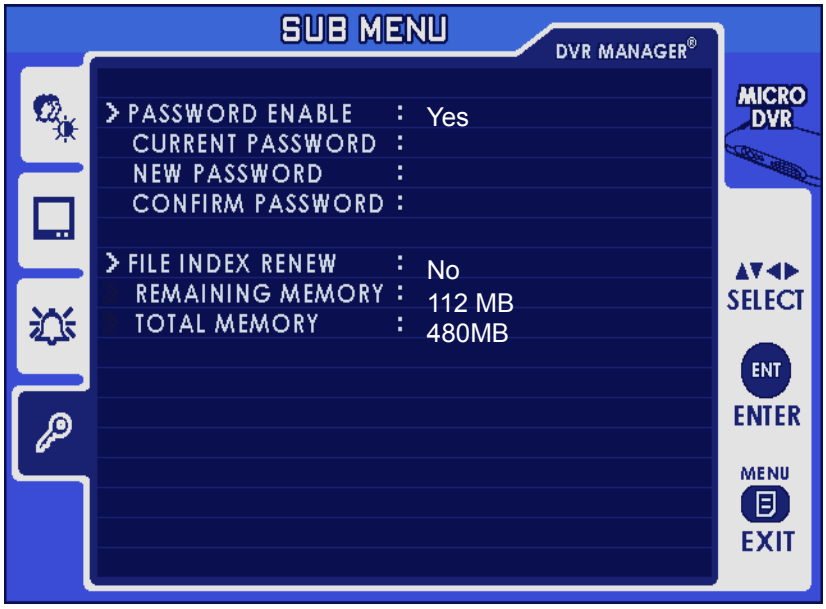
6. SUB MENU

6.1 PASSWORD CHANGE



The Factory Default Password is 0000. To enter this number, press the UP/DOWN button on the remote control. Once you input the current password, set a new four digit password using the buttons UP, REW, DOWN, FF on the remote control. Then, confirm your new password by entering the number again.

6.2 FILE INDEX RENEW



The index file is automatically generated and stored in the SD card when inserted into MiniD400. If the index file does not match the files actually stored in the SD card, users can synchronize the index file list and the actual file list. While synchronizing, the process percentage is displayed; on completion the value returns to 'NO'.

Chapter 7: SCREEN MODE

1. LIVE SCREEN MODE

When in live screen mode, 'time & date' information, screen icons and messages are shown on the screen.

1.1. SCREEN MESSAGE

Message	Description
INITIALIZING…	Displays when the MiniD400 is first powered up.
WAIT…	Displays when playback and live modes are switched or when switching between the screen mode and the OSD menu.
FILE NOT FOUND	Displays when there are no recorded files in the SD or no search result on search mode.
SD CARD ERROR	Displays when the SD card is physically damaged or recorded files in the SD CARD are damaged.
NO SIGNAL	Displays when there is no video input.
SD CARD LOCKED	Displays when SD CARD is locked or has an error.
INSERT SD CARD!	Displays when there is no SD CARD in the slot.
SD CARD FULL!	Displays when SD CARD is full so that video files can not be recorded. (OVERWRITE OFF)

1.2. SCREEN ICON

R	**EMERGENCY**	Displays when in emergency record mode.
M	**MOTION**	Displays when in motion-triggered record mode.
A	**ALARM**	Displays when in sensor-triggered record mode.
T	**TIME**	Displays when in schedule record mode.
F	**FULL**	Displays when there is less than 5% space remaining on the SD Card. (In case of 512MB SD, less than 25Mbyte) The icon disappears when 'disk full warning is set to 'OFF' on OSD menu.
S	**SYNC**	Displays when the content of index file is not matched with recorded files actually stored in the SD. The icon disappears when 'memory synch' is performed on OSD menu.
SEARCH	**SEARCH**	Displays when in search mode.

N.B. All Recording Indicators will show up first with in red then quickly turn to white.

RED INDICATOR: **Recording is processing, if it is stop the no file is made, thus it is not saved. (The unit has not had the time to form a file)**

WHITE INDICATOR: **When the white indicator is displayed, it means the recorded file can be made, even if you stop recording.**

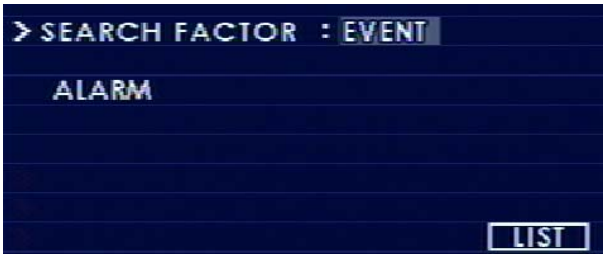
2. SEARCH LIST

After you select 'search factor', enter 'time & date' then click the 'LIST' button, the recorded files complying with the search condition are listed.

2.1 SEARCH FACTOR:
There are four ways to search for recorded files; **TIME, EVENT, BOTH (TIME & EVENT), NONE**

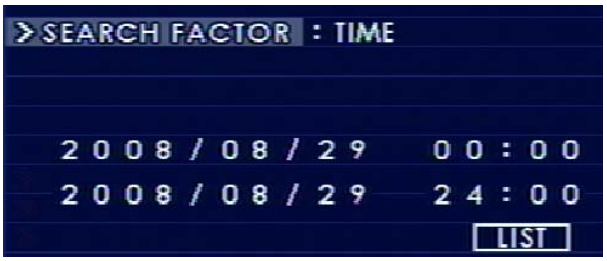
2.1.1 SEARCH FACTOR – EVENT:

When you select 'EVENT (or BOTH) on SEARCH MODE', sub search conditions open; ALARM / MOTION / EMERGENCY / TIME (Here, the time means "scheduled time recording" using scheduling feature).
More than two conditions can be selected. In this case, each condition is connected with 'OR' condition.



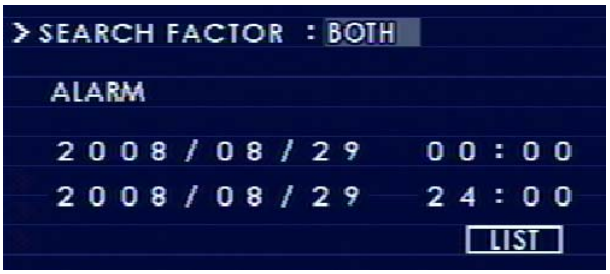
* **ALARM:** To search recorded files triggered by alarm-in event.
* **MOTION**: To search recorded files triggered by motion.
* **EMERGENCY**: To search recorded files generated by emergency recordings (full recording).
* **TIME** (scheduled time): To search recorded files generated by the time schedule.

.2.1.2 SEARCH FACTOR – TIME:



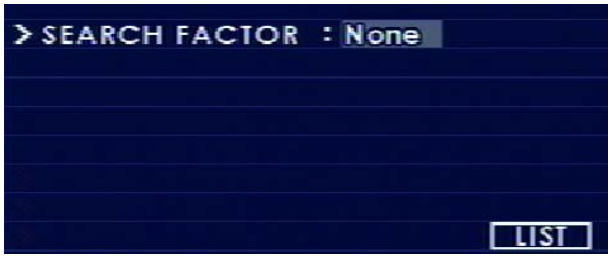
To search all recorded files within a specific period of time.
Enter the time period you wish to search in.

2.1.3 SEARCH FACTOR – BOTH:



When you select BOTH, search factors are combined in multiple conditions such as TIME and ALARM / TIME and MOTION /TIME and MOTION and EMERGENCY etc.

2.1.4 SEARCH FACTOR – NONE:



To search all the recorded files stored in the SD card select None.

< Play Back Screen View >

APPENDIX

TECHNICAL SPECIFICATION

ITEM	DESCRIPTION			
VIDEO				
Encoding	H.264			
Input Channel	1 Ch.			
Input impedance	75 ohm Unbalanced			
Input Format	PAL/NTSC (Auto Detection), Composite, Auto detection function			
Maximum Input	1.0Vp-p @ 75 Ohm Unbalanced			
Output Channel	1 Ch.			
Output impedance	75 ohm Unbalanced			
Output Format	PAL/NTSC (according to Input), Composite			
Maximum Output	1.0Vp-p @ 75 Ohm Unbalanced			
RECORDING				
Video Recording Resolution				
	Format	PAL	NTSC	
	4CIF	704x576	704x480	
	2CIF	704x288	704x240	
	CIF	352x288	352x240	
Video Recording Quality				
	Format	High	Normal	Low
	4CIF	1500Kbps	1000Kbps	500Kbps
	2CIF	1200Kbps	800Kbps	400Kbps
	CIF	1000Kbps	600Kbps	300Kbps
Video Recording Frame Rate				
	PAL	25, 12, 8, 6, 3, 1 fps		
	NTSC	30, 15, 10, 6, 3, 1 fps		
Recording Mode	Emergency / Schedule / Alarm / Motion Detection			
Decoding Video Format	As recorded Quality & Frame Rate			
Pre-recording Time	> 10sec(by Video Quality Setup)			
Storage	Support SD, SDHC (8GB max.)			
Storage File System	FAT32 (recommended) FAT16			
Maximum Recording File	2,000 files /Storage Device			
AUDIO				
Compression Format	16bit PCM, 8KHz			
Input Channel	1 Ch. Mono			
Input impedance	> 4.7Kohm, Unbalanced			
Maximum Input	6 mVp-p @600ohm			
Output Channel	1 Ch. Mono			
Maximum Output	13mW@RL =16ohm, Unbalanced			

Alarm	
Input	1 Ch. TTL(Internal full-up)
Output	1 Ch. TTL(Open collector)
OPERATING MODE	
Searching Method	Time/Event
Operating Mode	Live/Playback/Menu
VIEWER SOFTWARE	
Monitoring Environment	Client S/W
Connection	Supporting 1 Client
I/O	
A/Video Input	1Port, Female Stereo Phone Jack(include Jack Conversion Cable)
A/Video Output	1Port, Female Stereo Phone Jack(include Jack Conversion Cable)
Alarm I/O	1Port, Pluggable Terminal Block(include Plug)
SD Slot	1Port, SD Card Slot
DC Power Input	1Port, DC Power Jack
OTHERS	
LED	3 Status LED
Storage	Support SD, SDHC (8GB max.)
POWER	
Power consumption	Approx. 150mA @ 12VDC
ENVIRONMENTAL	
Storage Temperature.	-20 ~ +70°C
Operating Temperature.	-20 ~ +60 °C
Humidity	30 ~ 80 %RH (non-condensing)
PHYSICAL	
Dimension	92 (W) x 46 (L) x 18 (H) mm
Weight	Approx. 50g
ACCESSORY	
Remote Control	Supplied
A/V Input Jack /BNC Cable	Supplied
A/V Output Jack /BNC Cable	Supplied
AC/DC Adapter	Supplied
1GB SD Card	Supplied

Approximate Recording Time Table

4CIF (704x480 / D1) Recoding Time (NTSC/PAL): SANDISK – SD/SDHC MEMORY

Memory	Usable Memory	HIGH / 4CIF / 25fps	NORMAL / 4CIF /25fps	LOW / 4CIF / 25fps
512 MB	480 MB	33 min	47min	1hr 26min
1 GB	960 MB	1 hr 9 min	1hr 40min	3hr
2 GB	1.9 GB	2hr 22min	3hr 26min	6hr 10min
4 GB	3.8 GB	4hr 49min	6hr 57min	12hr 29min
8 GB	7.4 GB	9hr 32min	13hr 46min	24hr 44min

2CIF (704x240) Recoding Time (NTSC/PAL): SANDISK – SD/SDHC MEMORY

Memory	Usable Memory	HIGH / 2CIF / 25fps	NORMAL / 2CIF / 25fps	LOW / 2CIF / 25fps
512 MB	480 MB	40 min	58 min	1hr 42 min
1 GB	960 MB	1hr 25 min	2hr 1 min	3hr 34 min
2 GB	1.9 GB	2hr 55 min	4hr 10 min	7hr 20 min
4 GB	3.8 GB	5hr 54 min	8hr 27 min	14hr 51 min
8GB	7.4 GB	11hr 42 min	16hr 44 min	29hr 25 min

CIF (352x240) Recoding Time (NTSC/PAL): SANDISK – SD/SDHC MEMORY

Memory	Usable Memory	HIGH /CIF / 25fps	NORMAL /CIF / 25fps	LOW / CIF/ 25fps
512 MB	480 MB	47 min	1hr 14 min	2hr 6 min
1 GB	960 MB	1hr 40 min	2hr 35 min	4hr 24 min
2 GB	1.9 GB	3hr 26 min	5hr 19 min	9hr 3 min
4 GB	3.8 GB	6hr 57 min	10hr 46 min	18hr 20 min
8 GB	7.4 GB	13hr 46 min	21hr 20 min	36hr 18 min

* Recording time can differ according to SD card kinds.

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